Minutes of T11 HIPPI SWG, and HNF - Technical Committee (TC)
May 13-15, 1997
Mountain View, California

1. Opening remarks and introductions

The Chairman, Don Tolmie of Los Alamos National Laboratory, opened this HIPPI meeting and thanked Greg Chesson and Silicon Graphics Inc. for hosting this meeting. This group is constituted as both the HIPPI special working group (SWG) under T11, and the HIPPI Networking Forum (HNF) - Technical Committee (TC).

Don lead a round of introductions. The list of attendees is at the end of these minutes. Fred Templin noted that he was moving from NASA Ames to SRI, and Kevin Lahey would be the new NASA Ames participant. Fred was thanked for all his good work on HIPPI-6400, and wished the best in his new endeavors.

Don distributed hard copy lists of the attendees at the HIPPI meetings from December 1996 to April 1997.

2. Review / modify the draft agenda

Draft agendas were available on the web before the meeting, and hard copies were distributed at the meeting. No changes or additions were suggested, but rough starting times were set for some of the agenda items. These minutes reflect the approved agenda, although not in the exact order they were covered.

Don Tolmie agreed to take the meeting minutes, and solicited meeting notes from other attendees.

3. Review minutes from April 7-8, Palm Springs

Don Tolmie noted that under 13.3 the Minneapolis-St.Paul meeting date should have been July 8-10. He also noted that there were some errors in the attendance list first published in the minutes – and corrected in the current version (if Tad Szostak of 3M is listed, then you have the corrected version).

The minutes of the T11 HIPPI SWG / HNF - TC meeting of April 7-8, in Palm Springs were reviewed. Greg Chesson moved, and Roger Ronald seconded, to approve these minutes as corrected. Passed unanimously.

4. Review old action items

The action items from the April 7-8, 1997, meeting were reviewed for the current status. Note that many of these items are for HIPPI-800, and not relevant to this HIPPI-6400 / HIPPI-ST meeting.

1. Don Tolmie to provide an updated HIPPI meeting attendees list. (Done)
2. Michael McGowen to suggest to HNF that if they desire a name change for the public name of HIPPI-6400 that they come up with suggestions. (Carryover)
3. Michael McGowen to send an electronic copy of their HIPPI-800 End-Point MIB to Tolmie for posting on the web. (Carryover)
4. Everyone to review the HIPPI-800 Switch MIB and pass comments to Marck Doppke. (Carryover)
5. Michael McGowen to coordinate the HIPPI MIB developers. (Carryover)
6. Von Welch to contact HIPPI-6400 MIB users and developers for comments on the current draft, and to prepare a presentation on the MIB for a future meeting. (Carryover)
7. Everyone to review the HIPPI-6400 MIB. (Carryover)
8. Fred Templin, Jeff Young, and Greg Chesson to begin an IP and ARP over HIPPI-6400 RFC. (In process)
9. Michael McGowen to pursue having Phil Cameron look at ARP for HIPPI-800. (Carryover)
10. Fred Templin to do an IEEE tutorial for ULAs on HIPPI-6400, and the ULAs special to HIPPI-6400. (Carryover, passed to Chesson)
11. Michael McGowen - Update HIPPI-AC to work with HIPPI-SC and its recent changes. (Carryover)
12. Everyone to suggest changes to HIPPI-FP and bring in proposals for them. (Carryover)

13. Don Tolmie to revise HIPPI-FP, X3.210-1992, with the ULP-id for HIPPI-6400 encapsulation and get the HIPPI-FP document ready to forward. (Carryover)
14. Don Tolmie to take the appropriate steps to kill the HIPPI-MP project. (Done, T11 has the ball)

---

15. Greg Chesson to propose text on the e-mail reflector describing HIPPI-ST Request_To_Receive setup using the Persistent bit. (Done)
16. Greg Chesson and Jeffrey Chung to look at methods for rejecting a HIPPI-ST Request_To_Receive Operation. (Done)
17. Greg Chesson and Jeffrey Chung to consider developing "reason codes" to explain why a particular HIPPI-ST Operation was rejected. (Carryover)
18. Greg Chesson to do a first draft of HIPPI-ST over Ethernet. (Carryover)
19. Jeffrey Chung to finish revising HIPPI-ST Annex C for the next revision of ST. (Done by James Hoffman)
20. Greg Chesson and Jeffrey Chung to draft state tables for HIPPI-ST Operations. (Done)
21. Don Tolmie to update HIPPI-ST Rev 0.5 with the changes agreed to at the April meeting. (Done)

---

22. Greg Chesson to supply Don Tolmie and Roger Ronald with the layout of the OUI bits. (Carryover)
23. Fred Templin to make a PDF copy of the fabric structure that was used in the HIPPI-6400-SC broadcast discussions at the March meeting. Don Tolmie to put the PDF copy on the web site as an aid for further discussions. (Overcome by events)
24. Roger Ronald to determine whether the Port selector fields in Admin micropackets are big-endian or little-endian. (Done)
25. Roger Ronald to update HIPPI-6400-SC Rev 1.0 with the changes agreed to at the April meeting. (Done)

---

26. Don Tolmie to fix up the -PH service interface to support Admin micropackets in Transfer primitives, and to allow sending on all four VCs concurrently. (Done)
27. Greg Chesson and Fred Templin to check the Assigned Numbers RFC to see if there is an EtherType assignment for 802.1d, i.e., spanning tree, or should we use one of the HIPPI-6400-specific EtherTypes in HIPPI-6400-PH 7.2. (Done – No EtherType assigned, we will use a HIPPI-6400 specific EtherType)
28. Greg Chesson to have SGI folks check the second paragraph of -PH 11.2 (about periodic re-training sequences failing), and inform Tolmie whether or not the paragraph should be deleted. (Done)
29. Hansel Collins to obtain the driver output impedance values for HIPPI-6400-PH table 9. (Done)
30. Hansel Collins and Herb Van Deusen to check the value of the blocking capacitor for driving the copper cable. There was concern expressed that 100 pF was not large enough. (Done)
31. Hansel Collins to determine if there are any placement restrictions on the blocking capacitor. (Done)
32. Hansel Collins to draft text to replace -PH table 8, which gave the values for the cable coupling network. (Overcome by events)
33. Hansel Collins to provide the transfer function for figure 20, i.e., what the cable sees. (Overcome by events)
34. Hansel Collins to finish the cable driver test jig, test cable system, and determine the Source driver's output impedance. (Carryover)
35. Hansel Collins to develop a skew budget for the copper cable interface and present it at the May meeting. (Done)
36. Michael McGowen to collect and tabulate everyone's requirements for HIPPI-800 and HIPPI-6400 translation environments. (Carryover)
37. Don Tolmie to update HIPPI-6400-PH Rev 1.2 with the changes agreed to at the April meeting. (Done)

---

38. Don Tolmie to update the draft HIPPI-6400-OPT Project Proposal and get it in the T11 June mailing. (Done)
39. Hansel Collins, Steve Joiner, and Dan Schwartz to come up with a pulse width distortion number for HIPPI-6400-PH table 9, or something equivalent, e.g., jitter. (In process)
40. Don Tolmie to do an initial draft of HIPPI-6400-OPT. (Carryover)
41. Dan Brown to write the first draft of the optical portion of the HIPPI-6400-OPT document. (Carryover)
42. Don Tolmie to make Dan Brown's optical draft available on the HIPPI web page. (Carryover)

5. HIPPI-6400-SC

5.1 Review changes from Rev 1.0 --> Rev 1.1

Roger Ronald led the discussion on HIPPI-6400-SC rev 1.1, dated May 1, 1997. The changes were reviewed. Only the contentious issues that generated a lot of discussion are reported here.

There was a lot of discussion about timing out Admin commands, and what problems could occur as the result. Roger Ronald finally went down the list of commands, and outlined possible problems and recovery procedures. Roger agreed to include this suggested error handling information somewhere in the document.

The current references in Annex C that are called out as requirements will be moved to the Normative References clause. It was agreed that Annex B on bridging is no longer needed, and it will be deleted from future document revisions.

It was stated that a reasonable goal is to forward the HIPPI-6400-SC document at the same time as HIPPI-6400-PH, i.e., at the August meeting.

5.2 Port mapping and broadcast

It was suggested that we remove the 16-bit addressing mode, and emphasize the 48-bit ULAs. We could possibly use the "locally administered" bit with the HNF OUI to do a 16-bit address subset. Roger Ronald took an action item to investigate this possibility.

The text in clauses 9 and 10 will be changed to include multi-cast as well as broadcast. The term "non-broadcast capable switch" will also be changed.

5.3 Mapping OUI in the ULA

The OUI is a 24-bit code assigned by IEEE for use in the 48-bit ULAs, and the HNF is in the process of obtaining an OUI code (for $1000) for use with HIPPI-6400. Our intent was to use a single OUI and then have the low-order ULA bits map into the HIPPI-800 I-Field addresses. Don Tolmie had previously questioned where the OUI bits fit in the ULA, e.g., did it include the U/L and I/G bits.

Greg Chesson said that the HNF has applied for the OUI and it should be available in a few weeks. When it is in-hand, then he will provide a layout.

Greg also noted that the U/L and I/G bits are included in the 24-bit OUI as the highest order bits.

6. HIPPI-ST

6.1 Review changes from Rev 0.5 → Rev 0.6

Don Tolmie led the discussion on HIPPI-ST rev 0.6, dated May 8, 1997. The changes were reviewed. Only the contentious issues that generated a lot of discussion are reported here.

The definition for Opaque data was accepted with the addition of the words "in the Schedule Header". Changing the name of State_Response to Request_State_Response was greatly appreciated – but several places were found where it had not been done. Defining Port = x'0000' as being valid for Request_Port Operations only was accepted. Changing the RTR rejected response from "State_Response" to "Request_To_Receive_Response" was accepted. Changing the T_len parameter from 32-bits to 64-bit was accepted. It was agreed to renumber the Op values for the Operations in Table 3. They will start at x'16' and go through x'1F' – this allows us to fill in new operations from either end.

The text in 8.3, supplied by Greg Chesson, describing how RTR works was reviewed. During the meeting Greg worked on some alternate wording for parts of it, and presented it at the end of the meeting. The total text was then accepted.

The new Request_To_Receive_Response Operation in 8.4 was reviewed. With changes to note that RTRR is not only for Reject, and that it is not normally seen unless a Reject is needed, it was accepted. The addition of the Illegal_Blocksize_Error in 9.5.7 was reviewed and accepted. An additional change was made to add an Out_Of_Order_B_num_Error check and error bit.

The open issue about mapping between HIPPI-800 and HIPPI-6400 for channel attached devices was moved to HIPPI-6400-SC. The open issue about mappings to IPv4, IPv6, and MPI was removed since these items will be done as RFCs. Figures A.1 and A.2 will be modified to show the ULA space the same as in HIPPI-6400-PH.

New changes will be added to change the name of the T_len field to Sync. END will change to End, and ACK to Ack. S_count will change to S_num (it

was a count-down parameter, but now counts up, and is similar in nature and function to B_num – hence lets name them consistently).

It was agreed to change the maximum Bufsize, and maximum Blocksize, from 2^{64} to 2^{63}. In addition, the text will be changed so to more clearly express the value as a power of 2. The Max-STU size was also changed from 2^{32} to 2^{31}.

The requirement in 4.3.6 for the receiver to advertise one too few Slots was removed, and a requirement was added for the sender to keep a Slot in reserve for an End, Request_State, or Port_Teardown, to avoid deadlocks.

Greg Chesson requested that a new 16-bit parameter, called Block identifier (B_id), be added and be allowed to have different values for each Block. Before, a consistent R_id value was used for all Blocks of a Transfer. After some discussion the proposal was accepted. The B_id will be carried in the low-order bits of the Sync field of CTS Operations, and in the R_id field of RTR and Data Operations. In the CTS Operation the high-order Sync field bits will be transmitted as zeros, but not checked at the receiver. New descriptive text for B_id will be added in clause 4.4.

6.2 Opaque data control

There had been considerable e-mail discussion of where the opaque data started, who it belonged to, and whether it was different in STUs, Blocks, or consistent for the whole Transfer. It was agreed to change the text of 4.4.9 so that the values were not specified to be consistent. In addition, it was noted that the Opaque data would only be passed to the ULP when Silent = 0. The text describing which fields contained the high- and low-order portions of the Opaque data was also removed.

6.3 Concatenate and Source_Concatenate usage

Don Tolmie presented a proposal for using the Concatenate and Source_Concatenate bits. Essentially, they would be passed when setting up a Transfer, stating the mode that the sender would use. Then the following Operations, e.g., Data, would not carry the bits since it was unsure what a device would do if there was a conflict between what was in the setup and what was in the Data Operation.

The SGI folks had also been considering the Concatenate features, and found that other than for diagnostics they had no specific need for them. It was noted that virtually the same effect can be achieved by using large buffers and variable Offset values. Bob Willard noted that VMS had a similar capability that had not been used. Based on no defined need for the feature, and a desire for simplicity, both the Concatenate and Source_Concatenate capabilities will be removed from the document. Chris Satterlee took an action item to alert the HIPPI community to the upcoming change to give them one last chance to object before the change was made.

6.4 Striping and Virtual Connection setup

The text of Annex B was reviewed and some changes made. At the April meeting when reviewing the striping in Annex B there had been confusion over how the number and selection of Virtual Connections was controlled. It will be noted that the mechanisms for setting up, selecting, and otherwise controlling the underlying physical interfaces, is outside the scope of HIPPI-ST. The use of the Out_Of_Order flag will be specified for striping. The words "substitute physical return address (e.g., ULA)" will replace "spoofing".

6.5 Inclusion of state tables

At the April meeting Greg Chesson had passed out draft state tables, but we ran out of time to review them. Jeffrey Chung presented updated state tables at this meeting, and the attendees felt that that it was excellent work that should be included in the document as an informative annex. Jeffrey is using the Spin protocol verifier, with Promela as the input language.

Jeffrey agreed to continue refining the state diagrams, with plans for inclusion in a future version of HIPPI-ST. It was noted that the state diagrams essentially defined the service interface, but did not obviate the need for the textual service interface planned for clause 5.

6.6 Annex C status and wording

Annex C had major changes, and was reviewed. The semantics list for the Operations will be changed from specifying the field a parameter is carried in, to the name of the parameter and its value. The bold text will be made into plain text since the semantics format was revised to more of a list rather than

linear text. All of the individual Operations will be numbered to ease references. The shading in figures C.2 and C.3 will be removed. Rather than show the flag bits as binary values, the same abbreviations as in tables 2 and 3 will be used. The format of the Operations was accepted, and the shortcut method of showing multiple operations was accepted. Lots of other edits were suggested.

In going through the examples, a problem with the B_id use in RTR was noted, reinforcing the value of the annex. Wally St.John pointed out the using the names Jabba, Hutt, Calvin and Hobbs, was probably not a good idea since they were probably copyrighted. Don will select some new names.

In developing the examples James had found the need for an intermediate device to limit the maximum Blocksize since the Block is the only flow controlled unit. This could be negotiated during the Virtual Connection setup, similar to Max-STU size now. James also proposed a parameter to advise the other end to send the Transfer in multiple Blocks, and suggest a minimum number of Blocks, for efficient use of the underlying stripped physical interfaces.

Since the material is now an integral part of the document now, James Hoffman passed off editorial responsibility to Don Tolmie. Don noted that the magnitude of the changes was significant, and would be the last thing done, i.e., if time was short this was the place that would not be updated.

6.7 Annexes describing other mappings, e.g., Ethernet

In the Introduction it states that the -ST document specifies the mappings to IPv4, IPv6, and MPI upper-layer protocols, but no-one has signed up to draft the text for these. It was noted that these upper-layer mappings would be done in RFCs – hence the comment in the Introduction was removed.

The open issue questioning the address mapping between HIPPI-800 and HIPPI-6400 was removed – this item will become put in HIPPI-6400-SC by Roger Ronald and Craig Davidson.

Francois Gaullier asked if there was interest in a mapping of HIPPI-ST over ATM. The group felt that this was an excellent idea, and Francois took an action item to pursue it.

7. HIPPI-6400-PH

7.1 Review changes from Rev 1.2 → Rev 1.3

Don Tolmie led the discussion on HIPPI-6400-PH rev 1.3, dated May 6, 1997. The changes were reviewed. Only the contentious issues that generated a lot of discussion are reported here.

Greg Chesson noted that the schedule for the first SuMAC chips has slipped to September 9.

There is interest in spercifying an 8-bit copper interface – but it should not slow down or replace the current 16-bit copper interface. Don Tolmie outlined the processing steps for public review, and stated that there were chances to modify the document during public review if we need to. Hence, we can investigate the 8-bit copper interface and decide on the proper approach later, e.g., add to present document, revision, addendum, etc. Ron Nikel stated that the cable equalizer network was the same for either the 500 MHz or 1 GHz versions.

Changes to Table 1 on page 7 to include the first 8 bytes of user data in the Header micropacket were accepted.

Craig Davidson requested clarification that setting the ERROR bit was done as the result of any uncorrectable errors, not just ECRC errors. For example, if the HIPPI-800 translator had an LCRC error. Don agreed to add some text to the ERROR text in 6.1 to express this thought.

The changes to the Link Reset and Initialization clause were reviewed and minor gramatical errors pointed out.

7.2 Service interface

The method used to specify multiple transfer operations concurrently was reviewed. Some text shuffling was requested to clarify the interlock relationships. The possibility of moving the service interface to an informative annex was discussed.

It was noted that the term "upper-layer protocol" gave some people problems, e.g., they felt that it implied software. To help clarify the issue, it was agreed to use the term "next layer" instead. Figure 6 will also be re-drawn to show both Admin and Transfer peer portions in the next layer.

It was agreed that the 64_TRANSFER primitives would pass the whole LLC/SNAP header rather than just the EtherType

Lots of editorial changes were made throughout the service interface clause.

7.3 Copper interface

7.3.1 Review changes from Rev 1.2 → Rev 1.3

The parameter and text changes were reviewed. Some editorial changes were made to the text. The light-present signal continues to cause some people problems, and Steve Joiner suggested the addition of a block diagram showing all 12 fibers and the light present signal. The duty cycle and tolerance parameters for the Data, Control, and FRAME signals will be removed from tables 8 and 12.

After some discussion, and assurances from Hansel Collins, the maximum skew compensation was changed from 8.5 ns to 10 ns (where it had started some time ago). The cable skew tolerance was also increased from 6 ns to 7 ns. The FRAME signal pattern during 8-bit system training sequences had been corrected in 10.4, but not in figure 19 – Don will fix it in the next revision.

Based on actual board layout by E-Systems, the connector pin numbers were changed, with the _In_ and _Out_ being swapped for each signal. This change was reviewed and accepted. Don requested that Robert Clarkson take a good look at the change and make sure that it was done correctly.

Steve Joiner noted that our vision of jitter and pulse width distortion may not be the same as other people's vision. Steve and Hansel Collins took an action item to come up with definitions that would fit HIPPI-6400. Hansel also took an action item to supply an eye mask diagram.

7.3.2 Support for short cables

The equalizer was moved from the backshell to the board at the April meeting, and back to the board based on some e-mail discussions. Further simulations and work by Ron Nikel, Bill McCoy, and Gene Dornhoff suggested that we still had problems with short cables. This needs further study. The possibilities suggested at this meeting included using high-loss cable (e.g., with a small wire size – large gage number) and putting the equalizer in the backshell. John Ellis took an action item to further investigate the test costs and problems associated with the series capacitor in the backshell. John will also determine the smallest wire (largest gage number) that can be used with the Berg connector. The consensus was that we had to make a decision at the June meeting and get this nailed down. It was questioned whether Annex A.6 about the cable equalization network was still correct and appropriate, and it was decided to leave it alone until the equalizer question is settled.

Ron Nikel proposed putting a series resistor in the backshell of short cables to attenuate the signal to acceptable levels. Don Tolmie stated that simulations done by Gene Dornhoff showed that this solution did not work since it put an impedance mismatch in the cable that caused signal quality problems.

7.3.3 Hamonization with Optical specifications

At the April meeting, some of the fiber folks had expressed concern about the pulse width distortion specifications. Nothing was done about it at this meeting. Robert Clarkson proposed an OFC scheme over e-mail, but has not received any responses yet.

7.4 Plans for forwarding

It had been previously stated that we wanted to forward HIPPI-6400-PH at the June meeting. This would require that the document be complete and ready for an T11 letter ballot by that time. It was realized that there was no hope of meeting this date, and a revised date of forwarding at the August plenary was agreed to. It was agreed at the April meeting that we do not need a complete read-through in committee before forwarding. At the May meeting we still are shooting for an August forwarding.

8. Patents

8.1 Hewlett-Packard patents status

Don stated that we need all of the known patent issues resolved and patent releases completed and submitted to ANSI before we can forward a document for public review.

Greg Chesson reported that Hewlett Packard was very close to signing their ANSI patent release. As soon as SGI can satisfy Hewlett Packard that the

SuMAC chip will be available via a distributor, then HP will complete it.

8.2 Call for other patents

Don stated that we need all of the known patent issues resolved and patent releases completed and submitted to ANSI before we can forward a document for public review.

A call was issued for the existence of patents required to implement any and all HIPPI standards to be disclosed. It is necessary for the patent holders to agree to license those patents in conformance with the ANSI patent policy if the project on which they read is to proceed. T11 and the HIPPI group are not involved in this process at all.

The contact at ANSI is the General Counsel, Ms. Amy Marasco - (212) 642-4954 or amarasco@ansi.org. An ANSI patent policy description is at www.ansi.org/proctbl.html, section 1.2.11.

No new patent claims were made at this meeting.

Don noted that he has forwarded the Berg connector patent release forms to ANSI.

9. Administrative matters

9.1 T11 reorganization status

X3 has been renamed, they are now the National Committee for Information Technology Standards (NCITS). The Technical Committee responsible for HIPPI also had its name changed from X3T11 to T11. This last change is probably the one that most HIPPI folks will see, the other changes mainly show up in some of our boiler-plate. It is unknown if future standards will be X3.xxx or not.

The T11 letter ballot on reorganizing T11 passed: 55 for, 12 opposed, 5 abstaining, and 7 not voting. There were comments from 13 voters. Nobody objected to establishing a T11 Task Group (TG) for HIPPI. No significant objections were made to establishing TG for Physical Variants, i.e., FC-0. There is still a lot of discussion about how to organize Task Groups responsible for the remaining Fibre Channel projects - this was delayed for further study. T11 voted to establish T11.1, HIPPI, starting at the August meeting. T11.2, Physical Variants, was also established. These new Task Groups will be proposed to OMC by Roger Cummings, T11 Chairman; approval must be obtained before it will occur. If it occurs, then the August meeting will be the organizational meeting for T11.1, and all attendees at this meeting will automatically become voting members of T11.1. After the August meeting, people will need to attend two consecutive T11.1 meetings to obtain voting membership. It is unclear when T11.1 members would be billed for membership.

10. Future meeting schedule

10.1 Plenary week, June 9-10, Seattle, WA

During the T11 June plenary week , the following HIPPI meetings are scheduled:

Monday, June 9 -
1 PM - 5 PM — HIPPI-6400 Copper
5 PM - 9 PM — HIPPI-6400

Tuesday, June 10 -
8 AM - 2 PM — HIPPI-800 and -6400
2 PM - 5 PM — HIPPI-6400 Optical
5 PM - 6 PM — HNF
6 PM - 9 PM — All HIPPI topics

Note that an HNF marketing meeting, and a T11 Plenary meeting, are both scheduled for Wednesday, June 11, from 9 AM - 5 PM.

The location is the Red Lion Hotel – Seattle Airport, Seattle, Washington. Mike Foster and Boeing are the host. (See the meeting announcement on the web page at http://www.cic-5.lanl.gov/~det/ for further details. Note that the reservation deadline is May 18.)

10.2 Interim HIPPI-6400 meeting, July 8-10, Minneapolis-St.Paul

This interim meeting will cover HIPPI-6400 and HIPPI-ST issues. The meeting times were set at this May meeting based on flight schedules from/to the major participant's locations. Discussion of copper issues will start at 1 PM on Wednesday, July 9th.

Tuesday, July 8 — 2 PM - 9 PM
Wednesday, July 9 — 8 AM - 9 PM (copper 1 PM)
Thursday, July 10 — 8 AM - 4 PM

The location is the Cray Research facility. Jeff Young and Cray Research are the host. A group of rooms at the Hampton Inn in Eagandale has been blocked for this meeting. (See the meeting announcement on

the web page at http://www.cic-5.lanl.gov/~det/ for further details.)

10.3 Future meeting dates and locations

The following 1997 T11 plenary week dates are shown below. T11 changed their Plenary day from Wednesday to Thursday starting at the August meeting, but the October host was unsure if they could accommodate the same change. With the T11 Plenary move, Don Tolmie was able to move the HIPPI meetings to Tuesday and Wednesday during Plenary week, making it easier for people to attend without having to travel on the weekend.

1997 –

Jun 9-10	Plenary	Seattle, WA	Boeing
July 9-10	Interim	Minneapolis, MN	Cray
Aug 5-6	Plenary	Honolulu, HI	Hitachi
Sep 9-11	Interim	Mt. View, CA	SGI
Oct 6-7 ??	Plenary	Tucson, AZ	FSI
Nov 4-6	Interim	Albuquerque, NM	LANL
Dec 9-10	Plenary	Orlando, FL	DPT

The interim September and November meetings were firmed up, based on the fact that we may have a bunch of letter ballot comments to consider, and they may generate changes to the documents.

The 1998 schedule is less firm, but here is what is currently being considered by T11 for the plenary meetings. Question marks note the ones that are open. Hopefully HIPPI-6400 will be far enough along that we will not need interim working meetings.

1998 –

Feb 10-11	Plenary	San Diego	Qlogic
Apr 21-22	Plenary	Palm Springs, CA	Brocade
Jun 9-10	Plenary	St. Petersburg Beach, FL	AMP
Aug 11-12	Plenary	??	Hitachi ??
Oct 6-7	Plenary	Ft. Lauderdale, FL	Adaptec
Dec 8-9	Plenary	Tucson ??	??

11. Review action items

(The action items are grouped by project or category to hopefully make them easier to find.)

1. Michael McGowen to suggest to HNF that if they desire a name change for the public name of HIPPI-6400 that they come up with suggestions.
2. Michael McGowen to send an electronic copy of their HIPPI-800 End-Point MIB to Tolmie for posting on the web.
3. Everyone to review the HIPPI-800 Switch MIB and pass comments to Marck Doppke.
4. Michael McGowen to coordinate the HIPPI MIB developers.
5. Von Welch to contact HIPPI-6400 MIB users and developers for comments on the current draft, and to prepare a presentation on the MIB for a future meeting.
6. Everyone to review the HIPPI-6400 MIB.
7. Kevin Lahey, Jeff Young, Jean-Michel Pittet, and Greg Chesson to begin an IP and ARP over HIPPI-6400 RFC.
8. Michael McGowen to pursue having Phil Cameron look at ARP for HIPPI-800.
9. Greg Chesson to contact Bob Snively of Sun about material and format for an IEEE tutorial on HIPPI-6400 ULA usage, and the ULAs special to HIPPI-6400.
10. Michael McGowen - Update HIPPI-AC to work with HIPPI-SC and its recent changes.
11. Everyone to suggest changes to HIPPI-FP and bring in proposals for them.
12. Don Tolmie to revise HIPPI-FP, X3.210-1992, with the ULP-id for HIPPI-6400 encapsulation and get the HIPPI-FP document ready to forward.
13. Greg Chesson and Jeffrey Chung to consider developing "reason codes" to explain why a particular HIPPI-ST Operation was rejected.
14. Greg Chesson to do a first draft of HIPPI-ST over Ethernet.
15. James Hoffman to lead the e-mail discussion of intermediate devices setting Block size limits.
16. Jim Pinkerton to resolve the use of R_id, S_id, B_id and their use in Request_To_Receive.
17. Chris Satterlee to notify the HIPPI community by e-mail that the Concatenate and Source_Concatenate features were planned to be removed from HIPPI-ST.
18. Francois Gaullier to develop the basics of a mapping of HIPPI-ST over ATM.
19. Don Tolmie to update HIPPI-ST Rev 0.6 with the changes agreed to at the May meeting.
20. Greg Chesson to supply Don Tolmie and Roger Ronald with the layout of the OUI bits.

21. Roger Ronald to investigate specifying using either full 48-bit ULA addressing, or a subset selected by the "locally administered" bit, and provide appropriate text for HIPPI-6400-SC.
22. Roger Ronald and Craig Davidson to include the address mapping between HIPPI-800 and HIPPI-6400 in future revisions of HIPPI-6400-SC.
23. Don Tolmie to have an ANSI Style Manual sent to Roger Ronald.
24. Roger Ronald to update HIPPI-6400-SC Rev 1.1 with the changes agreed to at the May meeting.
25. Hansel Collins to draft text to replace -PH table 8, which gave the values for the cable coupling network.
26. Hansel Collins to finish the cable driver test jig, test cable system, and determine the Source driver's output impedance.
27. John Ellis to determine the smallest wire (largest gauge) that can successfully be used with the Berg connector.
28. John Ellis to investigate cable testing costs and complexities if the total equalizer network is in the backshell, including the series capacitor.
29. Everyone to investigate the cable termination problems and be ready to make decisions at the June meeting.
30. Hansel Collins and Steve Joiner to determine the values to replace the 'TBDs' in the copper clauses of HIPPI-6400-PH.
31. Hansel Collins and Steve Joiner to draft definitions of pulse width distortion and jitter for use in HIPPI-6400-PH.
32. Hansel Collins to provide an eye mask diagram for the copper cable variant.
33. Ron Nikel to look at the stub reflection if the equalizer is on the board and a series resistor is in the backshell of a short cable.
34. Robert Clarkson to review the revised connector layout for correctness.
35. Michael McGowen to collect and tabulate everyone's requirements for HIPPI-800 and HIPPI-6400 translation environments.
36. Don Tolmie to update HIPPI-6400-PH Rev 1.3 with the changes agreed to at the May meeting.
37. Hansel Collins, Steve Joiner, and Dan Schwartz to come up with a pulse width distortion number for HIPPI-6400-PH table 9, or something equivalent, e.g., jitter.
38. Don Tolmie to do an initial draft of HIPPI-6400-OPT.
39. Dan Brown to write the first draft of the optical portion of the HIPPI-6400-OPT document.
40. Don Tolmie to make Dan Brown's optical draft available on the HIPPI web page.

12. Adjournment

The meeting adjourned at 3:45 PM on May 15.

Attendance

John Ellis	Berg	717-938-7512	ellisjr@bergelect.com
Jeff Young	Cray Research	612-683-5536	jsy@cray.com
Gordon Boyd	Digital Equipment Corp.	603-884-1309	boyd@solvit.enet.dec.com
Bob Willard	Digital Equipment Corp.	508-493-5482	willard@wonder.enet.dec.com
Mark Woodbury	Digital Equipment Corp	603-884-0850	woodbury@mail.dec.com
Michael McGowen	Essential Communications	505-344-0080	mikemc@esscom.com
Francois Gaullier	Hewlett Packard	4-7614-5181	francois_gaullier@hp.com
Steve Joiner	Hewlett Packard	408-435-6421	steve_joiner@hp.com
Peter Mahowald	Hewlett Packard	408-435-6366	pete_mahowald@hp.com
Henry Brandt	IBM Poughkeepsie	914-433-7684	hrap@vnet.ibm.com
Chris Olson	Lockheed Martin	602-925-7275	chris.e.olson@lmco.com
Don Tolmie	Los Alamos National Lab	505-667-5502	det@lanl.gov
Kevin Lahey	NASA Ames	415-604-4334	kml@nas.nasa.gov
Fred Templin	NASA Ames	415-604-6514	templin@nas.nasa.gov
Joe Parker	Optivision	415-855-1775	parker@optivision.com
Craig Davidson	Raytheon E-Systems	972-205-4166	davidson@esy.com
Bill McCoy	Raytheon E-Systems	972-205-7234	
Roger Ronald	Raytheon E-Systems	972-205-8043	rronald@esy.com
Greg Chesson	Silicon Graphics	415-933-3496	greg@sgi.com
Jeffrey Chung	Silicon Graphics	415-933-3823	jdchung@sgi.com
Hansel Collins	Silicon Graphics	415-933-2921	hac@engr.sgi.com
James Hoffman	Silicon Graphics	415-933-6009	jrh@asd.sgi.com
Bob Newhall	Silicon Graphics	415-933-5424	newhall@asd.sgi.com
Ronald Nikel	Silicon Graphics	415-933-5450	ren@sgi.com
James Pinkerton	Silicon Graphics	415-933-4943	jimp@sgi.com
Jean-Michel Pittet	Silicon Graphics	415-933-6149	jmp@sgi.com
Don Sanders	Silicon Graphics	415-933-6087	dsanders@sgi.com
Chris Satterlee	Silicon Graphics	415-933-2606	csatt@sgi.com
Wally St.John	Silicon Graphics	415-933-7613	wbs@engr.sgi.com
Teruo Utsumi	Silicon Graphics	415-933-8723	teruo@engr.sgi.com
Albert Kelley	Tensolite	904-829-5600	akelley@tensolite.com